

Developing a Plan to bring the Yukon Fire Department into Compliance
with the Respiratory Protection Standard 29CFR 1910.134

Strategic Management of Change

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Abstract

One of the best ways for a fire department to manage change is to have an organized plan to address the problems associated with change. The problem is the Yukon Fire Department is not in compliance with 29CFR 1910.134, the Respiratory Protection Standard. The purpose of this project is to develop a plan to bring the department into compliance. An action research methodology was utilized to answer the following questions:

1. What are other Oklahoma City Metro area fire departments doing to address their compliance with the standard?
2. What can the Yukon Fire Department do to evaluate their current level of compliance with the standard?
3. What should be considered in developing a plan to implement necessary changes to bring the Yukon Fire Department into compliance with the new standard?

A literature review was conducted utilizing several references obtained through interlibrary loan, National Fire Protection Association standards, Executive Fire Officer research papers, and from other books, journals, and articles. A copy of the standard itself was downloaded off the Internet. Also utilized were phone and personal conversations with several fire service professionals, fire chiefs, and training agency representatives.

A survey was sent to ten Oklahoma City metro area fire departments to help determine what they were doing to check their level of compliance, as well as what areas of the standard they were dealing with. The results of the survey helped to determine what other area fire departments had done, and what was needed to bring the Yukon Fire Department into compliance. A compliance check sheet

was developed by the researcher to determine his agency's level of compliance with the standard. The check sheet was utilized extensively during the process of developing this project. The researcher also utilized the change management model outlined in the National Fire Academy course "Strategic Management Of Change" to determine an appropriate strategy for managing change within his organization.

Recommendations made by this researcher involve making a valid determination of the department's level of compliance, and creating a committee made up of both line personnel and management to plan for implementation of the necessary changes. A committee of personnel representing all ranks from the Yukon Fire Department was established to brainstorm ideas for compliance, and increase the chance for acceptance of the plan by all personnel.

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INTRODUCTION

On January 8th, 1998, the United States Secretary of Labor Alexis Herman signed into law a significant piece of legislation that would have a profound effect on the fire service. The legislation is known as the Occupational Safety and Health Administration (OSHA) Respiratory Protection Standard 29CFR 1910.134. It is intended to enhance protection of firefighters responding to and / or training for response to incidents involving an atmosphere which is considered Immediately Dangerous to Life and Health (IDLH). It was written to incorporate parts of other safety related standards while other portions of the standard were written to address conditions not previously covered. Still other areas of the standard were revised to enhance their overall validity and impact.

The problem is the Yukon Fire Department is not in compliance with 29CFR 1910.134, the Respiratory Protection Standard. The purpose of this project is to develop a plan to bring the department into compliance. An action research methodology was utilized to answer the following questions:

1. What are other departments in the Oklahoma City Metro area doing to address their compliance with the new standard?
2. What can the Yukon Fire Department do to evaluate their current level of compliance with the standard?
3. What should be considered in developing a plan to implement necessary changes to bring the Yukon Fire Department into compliance with the standard?

BACKGROUND AND SIGNIFICANCE

The National Fire Academy Executive Fire Officer course “Strategic Management Of Change” (SMOC) emphasizes the importance of utilizing a systematic approach to managing change within an organization. This is significant in that managers should address changes in some organized manner. The model described in the Strategic Management of Change curriculum involves a step-by-step approach utilizing front-end analysis, planning, implementation, and evaluation steps. This four-phase method can be utilized as an effective tool to manage organizational change.

The topic of this project was chosen due to the timely nature of the problem, and the need the Yukon Fire Department has for development of a plan to bring the department into compliance with the new standard. This new law must be addressed by all fire service agencies including municipal or industrial fire departments, and state training agencies.

Several elements in the standard are applicable to the operations of the Yukon Fire Department. While other agencies may be impacted by other parts of the standard, the researcher will focus on those areas of the standard that affect his agency. The standard is possibly better known as the “two in / two out” rule even though only a couple of lines of text in the more than twenty-eight (28) page standard actually require this procedure. However, “two in / two out” is the part that has had the most publicity, created the most controversy, and possibly caused the most impact on the fire service.

The new rule is the result of firefighters being killed or injured in fires while they operated inside a burning building where outside rescue teams were not standing by. A series of firefighter fatalities in eight different cities prompted the International Association of Fire Fighters (IAFF) to begin pushing for the “two-in/ two-out” regulation. International Association of Fire Fighters president Al Whitehead

spoke personally with President Clinton to initiate formal proceedings with the Occupational Safety and Health Administration and the Department of Labor (Bruno, 1998).

When the standard was published and signed into law, it created a great deal of controversy in the fire service, and caused many administrators and fire chiefs to scramble for information and resources to bring their departments into compliance. The results of a survey done by the researcher, which can be found in Appendix “A” of this document, indicated that only half of the departments surveyed for this project are in full compliance with the standard at this writing.

When Yukon Fire Department personnel were introduced to the standard the immediate reaction was negative. It was seen as a burden by company officers who expressed their concern on many issues. Prior to formally introducing the standard to Yukon Fire Department personnel, a meeting was held to include fire department staff and the City’s community enhancement director to discuss applicable portions of the standard. During the meeting, deadlines, goals and objectives were discussed, and an action plan to bring the department into compliance was requested. As stated previously, the purpose of this project is to develop a plan to bring the department into compliance with the standard.

The standard is intended to save the lives of firefighters who may not otherwise survive in a catastrophic event during an incident involving environments considered immediately dangerous to life and health. It forces departments to have a plan of action to address a number of potential problems with regard to respiratory protection of their personnel. Although the primary thrust of the standard is to require “two-in/ two-out”, the standard addresses many other areas.

One of the items mandated in the standard is for each department or agency to conduct a mask fit test for every member who may be required to wear a respirator as part of their job.

“... before an employee may be required to use any respirator with a negative or positive pressure tight fitting face piece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used.” (OSHA standard, paragraph f). In May of 1997, the researcher conducted his own mask fit test for all personnel at the Yukon Fire Department. In the test, each person donned self-contained breathing apparatus and face piece. A cloth soaked in household ammonia used for cleaning around the fire station was passed around the test subjects face near the seal of the mask. The idea was to see if the person being tested could smell the ammonia while wearing breathing apparatus. None of those tested could smell the ammonia while wearing the breathing apparatus. All could smell the ammonia after removing their face piece. While the test done by the researcher worked at the time, compliance with the new standard would allow for an outside vendor to conduct a more scientifically valid test, and create third party validation of the test results.

Solving this problem will benefit the Yukon Fire Department in several ways. It will create a safer workplace for personnel who must use a respirator or self contained breathing apparatus in the execution of their duties. Other areas addressed in the standard which will help the Yukon Fire Department protect their personnel include increased breathing apparatus training, revisions to the fire attack policy, updates to breathing apparatus maintenance procedures, an annual mask fit test and increased awareness of safety standards for all personnel. Even if departments are already doing all the things required in the standard, it will no doubt increase the awareness of personnel to utilize the resources necessary to enhance their own personal safety.

When first dealing with the problem, the researcher felt there should be a way to evaluate the current level of compliance with the standard in order to prioritize those items that needed to be addressed. After reviewing the standard, the researcher knew it needed to be broken down line-by-line, and some sort of check sheet developed. The purpose of the check sheet would be to chart those areas where the department is in full, or partial compliance with the standard, and point out areas that still needed to be addressed. With assistance from an intern from Oklahoma State University Fire Protection programs, a “Compliance Chart” was developed to track those areas of compliance, non-compliance, partial compliance, expected date of compliance, and costs for the areas addressed in the standard. The compliance check list can be found as Appendix “B” of this document.

Two issues where compliance with the standard would have a major impact in management of change were in the areas of cost and development of a time line. Both of these were considered major issues primarily since there had been little done with the budget in preparation for this undertaking. Also, since the standard had been signed into law and became enforceable in October of 1998, the city was forced to comply with what the standard entailed. Annual physicals, pulmonary function testing, and flow testing of breathing apparatus regulators were just a few of the items that are required by the standard. Since they had not been done in the past, these items had not been included when creating the annual budget. Addressing these items would have a definite impact on the annual operating budget.

One of the major changes for the Yukon Fire Department came in updating and revising the practices and procedures manual. Changes in the procedures manual ranged from slight revisions to the wording which would mirror wording in the standard, to a complete re-write of several procedures.

Also, the department needed write a completely new fire attack policy to address “two-in / two-out” specifically.

As the deadline for compliance with the standard approached, the researcher attended the National Fire Academy course “Strategic Management of Change”. In the course curriculum, students were introduced to a model for managing change within an organization. That change management model will be utilized extensively by the researcher, not only for the purpose of creating this document, but in managing the changes necessary to bring the Yukon Fire Department into full compliance with the standard

LITERATURE REVIEW

The fire service is an inherently dangerous occupation, with personnel injured or killed on an all too frequent basis. As in the Yukon Fire Department, many fire chiefs and chief officers across the country have accepted the standard as a positive step toward making our job safer. “The two-in / two-out rule has been a long time coming and is another important step in the never-ending battle to protect firefighters as they perform an inherently dangerous job. The two-in / two-out rule saves lives. Firefighters know this and, with this new regulation, the federal government now recognizes this fact.” (IAFF, p. 18)

Fire departments across the United States will be impacted by the adoption of this standard. Not only is this the law, but it gets us doing many of the things we should be doing to keep personnel safer. One area of each department’s operations that may need to be changed to address requirements in the standard is in the training of fire ground personnel. “The best way to ensure the safety of our personnel, our first objective, and comply with the standard, our second objective, is to have a

comprehensive training plan based on the standard and the operational issues your department faces.” (Edwards, p. 42).

The effect of the standard will be far reaching and will have an impact on every fire service organization in the United States. Not only will fire departments be affected, but virtually all training agencies will be impacted by the standard. Randy Novak, Director of Fire Service Training at Oklahoma State University indicated that the standard has had a great deal of impact on that agency, and probably on most state fire training programs, on several levels.

His agency has been answering a number of questions regarding requirements for compliance to the standard. The most frequently requested information is about written compliance plans, the need for fit testing, two-in / two-out requirements, and medical requirements for respirator wearers. He said Oklahoma State University Fire Service Training will continue to provide information upon request, and has arranged for several informational seminars to assist fire departments in their quest for information and assistance.

Mr. Novak stated that his agency has addressed the issue of two-in / two-out for live fire evolutions, but like most other state training agencies, there was not a great deal of change in his training procedures. They have taught live fire training evolutions that utilized backup crews to support and protect the primary crews for many years. The agencies compliance with the standard regarding staff users of respirators, medical testing, mask fit testing, and developing a written plan for the live fire training facility still needs to be completed. Other issues involve determining who must comply, and who will enforce the regulations. (Novak, December 1998).

Several states are affected by the Occupational Safety and Health Administration standard directly, while others are affected by their respective State Department of Labor. In a letter addressed to community leaders in Oklahoma, Brenda Reneau, Oklahoma Labor Commissioner writes, “Under title 40 of the Oklahoma Statutes, the Oklahoma Department of Labor is designated the responsibility to enforce this and other OSHA standards in the public sector. Prior to this, the issue was considered a federal ‘interpretation’ and as such, we did not have enforcement authority.” (Reneau, March 1998). The letter comes short of saying they will not actively enforce the requirements of the standard, but does mention the limited resources the agency has for enforcement. “. . . we are unable to provide strict enforcement and I continue to rely on the experienced capable leaders in our cities and towns to comply with all safety and health regulations. (Reneau, March 1998).

Arguments against the standard are as varied as those in support of the strict requirements. Just as the Yukon Fire Department was not prepared to address the financial strains, others have had the same experience. Some see this as another attempt by the government to control fire service issues through legislation. “To some chiefs, two-in / two-out is the latest in a long chain of unfunded mandates dropping from the federal level to state and local governments. (Baltic, p. 48).

Resentment at increased legislation and governmental requirements has caused a great deal of controversy in the industry. Some of the requirements are seen by some as not necessary, burdensome, and in some cases, detrimental to departments. Requirements for increasing the number of personnel on the scene of a fire before certain procedures can be performed is believed by some to be unnecessary.

In a nationwide survey conducted by Fire Chief magazine, Chief Lee Koontz of the Euless, Texas fire department writes, “The management of fire ground procedures and operations should be left

to the individual city and department. Safety is not guaranteed by increased numbers of personnel. Safety is the absolute most important thing in the operations of this department, and increased legislation would most probably be detrimental to operations and service delivery.” (Baltic, p. 50). In the same survey, a training officer from Otero County New Mexico writes, “It is not Washington’s job to dictate how a firefighters job is to be done. Recommendations are fine, laws are going too far.” (Baltic, p. 44).

The exact opposite opinion is expressed by Fire Chief Steve Moody from Salina, Kansas in response to the same survey. “This is a positive change for the fire service. With the adoption of this new standard, departments now have the option of waiting for the arrival of additional personnel. It is about time we put safety ahead of bravado.” (Baltic, p.44).

Most states are directly governed by the Occupational Safety and Health Administration, while other states are governed by their Department of Labor. Each state must insure safety standards are written and enforced to a level that is at least as stringent as those established by the federal government. In the 23 state-plan states, where state governments have previously agreed to adopt and enforce occupational safety standards that are at least as strict as those imposed by the Occupational Safety and Health Administration, the “two-in / two-out” rule does apply to public-sector fire departments. Even in state-plan states, however, career and volunteer departments might or might not be treated the same. Small departments, especially all volunteer departments, could have trouble meeting the standard in a timely manner.

The most common effect “two-in / two-out” will have on many departments is different standard operating procedures. Several respondents to the above mentioned survey specifically discussed the need to educate citizens and / or elected officials about “two-in / two-out” and its

possible ramifications. “We need to provide for our firefighters safety. However, if we do not provide for reasonable search and rescue efforts by less than four-person crews, citizens may attempt rescue efforts as fire crews observe.” (Baltic, p. 50). Numerous written comments to the survey emphasized both revised operating procedures, and the need to train fire crews in accordance with them.

PROCEDURES

The topic of this project was chosen due to the timely nature of the problem the Yukon Fire Department was experiencing and the need to develop a plan to bring the department into compliance with the new standard. The research procedures used to prepare this paper included a survey mailed to ten area fire departments to determine what they were doing with regard to compliance with the standard. A literature review was conducted to help the researcher determine what is important in developing a plan to bring the department into compliance.

Also utilized by the researcher was the change management model introduced in the Executive Fire Officer course “Strategic Management of Change”. The model is a four-phase process for managing change in an organization. The first phase of the model involves an analysis of organizational change requirements. Since the first of four phases had already been completed due to necessity and timing, the second phase of the model was followed for this project. Phase two of the model involves planning for changes by developing plans to respond to determined change requirements, and includes six tasks. Each task has several steps, which were followed in the creation of this document. The researcher developed a committee comprised of several members of his department to assist in planning for change by establishing goals and objectives, determining forces for and against change, and determining ways to make the change work more smoothly.

A survey was developed by the researcher and sent to ten Oklahoma City area fire departments. The purpose of the survey was to gather information regarding each department's compliance with the standard. These departments were chosen due to their close proximity to the Yukon Fire Department, approximate department size, and by personal contacts the researcher has in each of the departments. The close proximity made it handy for the researcher to visit or call each department to insure one hundred percent participation in the survey, thereby having a positive impact on the amount of information gathered.

The survey instrument was developed to gather information the researcher felt would be helpful to determine how other departments were dealing with their compliance with the standard. The questions were intended to be easy to answer, but worded to obtain information the researcher felt would help his department in their quest for compliance. A self addressed and postage paid envelope was included in each survey form mailed, as well as a FAX number where the survey form could be returned to the researcher. There was also an offer to have the completed report returned to the department completing and returning the survey form.

The departments chosen by the researcher to receive the survey can in no sense be considered a random sample. No generalizations should be made relating to the entire population of fire departments or training agencies. The researcher does however feel the information gathered through the process is valid, and provides sound information for the purposes of the research. Duplication of this research can be completed by anyone needing similar information as it relates to their specific agency.

A literature review was conducted to establish a foundation of information and references for the project. Resources included Executive Fire Officer research papers obtained through interlibrary loan from the Learning Resource Center at the National Emergency Training Center, several trade journals and other books. Additional resources included National Fire Protection Association standards, the City of Yukon practices and procedures manual, the Occupational Safety and Health Administration standards, personal contacts, and articles found on the Internet.

The researcher experienced a few limitations over the course of conducting research for this project. Most articles, journals, and standards on the topic were available through interlibrary loan, or through the Internet. The area of “two-in / two-out” was widely publicized and readily available. Several other areas addressed by the standard were not as widely publicized, and were therefore more difficult to locate in the literature review.

RESULTS

A survey was sent to ten Oklahoma City Metro area fire departments to obtain information regarding what each of those departments was doing regarding compliance with the standard. There were numerous trade journals, standards, applied research projects and other documents dealing with the subject located during the literature review. Information obtained from those resources was utilized to create a basis of information to help the researcher solve the problem. A committee of personnel employed by the Yukon Fire Department assisted in creating a plan to bring the department into compliance by utilizing the planning phase of the change management model. An intern employed by the Yukon Fire Department assisted in typing and formatting a compliance chart to check the department’s compliance needs.

Through an action research methodology, the following research questions were answered:

1. What are other Oklahoma City Metro area Fire Departments doing to address their compliance with the new standard?

A survey form was developed and mailed to ten Oklahoma City Metro area Fire Departments to determine what areas of their respective operations would be, or have been affected by the standard. The survey form and raw data collected can be found in appendix A of this report. All ten of the departments surveyed returned the completed form.

The areas addressed in the survey include changes to each department's apparatus manning assignments, operating procedures, equipment, and how the department evaluated their level of compliance. Several applicable parts of the standard will affect the Yukon Fire Department. While other fire departments or training agencies may be impacted by other parts of the standard, the researcher will focus only on those parts of the standard that are applicable to his agency.

General information was gathered from each of the ten departments regarding their total number of personnel and number of manned fire stations. Of the ten responding departments, only two indicated that the total number of personnel has increased over the previous two years. Neither of those indicated the change was an effort to help the department comply with the standard. The number of personnel normally assigned to an engine company ranged from two to five, with an average of three. When asked if that number had changed over the previous two years, only one department indicated that it had. They also indicated the change was to accommodate compliance with the standard.

Of the ten departments surveyed, only five stated they were in full compliance with the standard. The other five stated they were in partial compliance. At the time of this writing, the Yukon Fire

Department is in partial compliance with the standard. When asked how they evaluated their compliance with the standard, it was apparent that some departments utilized more than one method. Six departments did as the Yukon Fire Department and developed their own check-list. Two departments utilized an evaluation instrument developed by another department or other source. Two also utilized an outside or private consultant, at least to conduct the mask fit testing. Seven departments indicated they conducted an in-house review of policies and procedures. The Yukon Fire Department utilized a check-list developed in-house as well as a review of policies and procedures to evaluate their level of compliance.

The researcher developed a list of twenty three topic items that were either addressed in the standard, or considered by the Yukon Fire Department to be an issue for consideration. Of the items listed, the requirement for a written respiratory protection program was addressed by nine of the ten departments surveyed. Conducting a mask fit test was addressed by eight of the ten, and seven departments listed the interior fire attack procedure as an item addressed in their quest for compliance.

Six departments listed use of rapid intervention teams, medical evaluations and documentation procedures as items changed as a result of the new standard. Only four departments indicated changes to their procedures for testing the quality of their breathing air, incident accountability procedures, and deployment of backup hose lines. A finding surprising to the researcher was that only four departments indicated that changes in the evaluation of their respiratory protection program was addressed in their department.

Three departments indicated they experienced changes in procedures for operating in immediately dangerous to life and health environments, and two changed their mutual aid response

procedure, incident command procedure, respirator training, or their physical fitness program. Only one department listed any changes in equipment or had changes to their respirator maintenance and care procedures, selection of respirators, or confined space procedures.

None of the departments surveyed listed use of respirators, use of cartridge respirators, or ventilation procedures as items addressed or changed to attain compliance. One comment was made at the end of the survey, which indicated the department was awaiting the arrival of materials and equipment for them to conduct mask fit testing in-house. Of the ten departments surveyed, only six requested a copy of this report.

2. How does the Yukon Fire Department evaluate their current level of compliance with the standard?

In an effort to determine a way to evaluate our current level of compliance with the standard, the researcher looked for similar materials and evaluation instruments utilized by other agencies. National Fire Protection Association 1500 - Standard for Firefighter Safety and Health Programs utilized a check list that corresponded with requirements in the standard. Department managers could use this check list to track their compliance level with the various components of the standard. With the help of an intern from Oklahoma State University, the researcher developed a similar type of compliance check list to document areas of compliance or partial compliance. Other areas which can be charted on the check list include an estimate of the expected compliance date, estimated cost for each item, and a remarks section for each item. The forty-page check-list can be found as Appendix "B" of this report.

3. What should be considered in developing a plan to implement necessary changes to bring the Yukon Fire Department into compliance with the standard?

The National Fire Academy Executive Fire Officer course “Strategic Management of Change” emphasizes the importance of utilizing a systematic approach to managing change within an organization. This is significant in that managers should address changes in some organized manner. The model described in the course curriculum involves a step-by-step approach utilizing front-end analysis, planning, implementation, and evaluation steps. This four-phase method can be utilized as an effective tool to manage organizational change.

The researcher was able to utilize the second phase of the change management model, which involves development of a plan to respond to determined change requirements. There are six tasks included in this planning phase, with each task involving three to five steps. Task 2.1 was to identify forces for and against change. A committee developed by the researcher met to discuss these forces that were driving the change, as well as the restraining forces. Once these forces were identified, the department can do whatever it takes to maximize the impact of the driving forces, and minimize the restraining forces.

With input from all committee members, there were several forces for and against change identified. The most obvious force for change in this instance is the fact that the standard has been signed into law, and is now enforceable as such. An increase in personnel safety in the way of better training, better equipment, baseline fitness tests, better air quality, rapid intervention teams and mask fit testing were also seen as positive steps. Increased awareness of safety issues and an update of standard operating procedures will also affect Yukon Fire Department personnel in a positive way.

Forces against change in the Yukon Fire Department include resistance from the union membership and many of the line officers, and increased costs to the city to administer the programs.

Decreased favorable public perception of the fire department if they witness them waiting outside a burning building for a backup crew was also mentioned due to possible delays in an interior fire attack. Increased responsibility to educate the public on the new law and why we operate like we do was listed as another drawback. All of these items increased the burden on the department with manpower shortages on an initial fire alarm.

Task 2.2 involved selecting personnel to develop vision for and against change. The researcher developed a committee of volunteers from within the department to assist in this process. The selection process included a plan to have each shift represented, have a member of each rank structure represented, and have the local bargaining unit represented. Since the change would affect department members at all levels, all levels of personnel were invited to participate. This was seen as a positive way to assist in changes being institutionalized much more quickly.

The researcher selected a Captain from one shift, a Driver from another shift, and Firefighter from the third shift. The President of the local union was involved, and happens to carry the rank of driver. This bottom-up team strategy outlined in the “Strategic Management Of Change” course curriculum was utilized since lower level personnel should be able to offer strategies to enhance the effectiveness of changes to come. The researcher, who carries the rank of Assistant Chief, and the Chief represent the interests of management. A volunteer Firefighter, city personnel director, and city manager were also invited to participate.

Task 2.3 listed four steps toward envisioning the change to be implemented. Each of the personnel involved in the committee expressed their vision of how these changes would impact the department. Step one was to generate the desired state to be achieved from change. The committee

agreed that in order to do that, we must first determine which parts of the standard are applicable to operations at the Yukon Fire Department. Once this is done, we can strive for compliance with all applicable parts. We would then move to step two, which was to evaluate the completeness and soundness of the envisioned change. The committee agreed this would be to determine if the changes planned would fulfill their purpose.

Step three was to develop a roadmap to achieve the envisioned change. The committee decided to create a step-by-step flow chart to make sure appropriate changes were being implemented. Areas the committee felt should be addressed and their order of relative importance included: physicals and mask fit testing; quality of breathing air; changes and updates in the departments practices and procedures manual including a “2 in / 2 out” policy for operating in and around hazardous environments; selection and use of breathing apparatus; breathing apparatus maintenance and documentation procedures; and development and evaluation of the written plan. This flow chart would follow directly with the goals established in the next task.

The final step in this task was to generate ideas for vision, inspiration, and emotional appeals to all personnel. The committee decided this would involve plans to emphasize benefits of change to all personnel to promote cooperation and minimize resistance. We would do our best to maximize the positive aspects of compliance with the standard, which were outlined in the force field analysis, in an attempt to achieve a positive outcome. The first benefit listed by the committee was increased safety in our operations, not only to fire department personnel, but to the public we are here to serve. Another positive aspect was offering a physical exam to each employee at no cost to them.

The committee also felt that compliance with the standard could have a positive impact on the Yukon Fire Department's struggling physical fitness program. Another idea was to involve city government officials if possible. This was seen as a good way to promote two-way communications through all levels of the organization, and educate people in leadership positions in the community about the how the standard effects our operations.

Task 2.4 involved setting and evaluating target goals and objectives of envisioned change. The steps involved setting the goals, ensuring they were explicitly stated, ensuring they were precise and quantifiable, ensuring they included desired outcomes and processes, and determining an evaluation strategy.

The committee outlined eight goals for implementation of changes in the department. The goals were written utilizing a format with the acronym S.M.A.R.T. Each of the goals were checked to insure they were written in a manner so as to be Specific, Measurable, Attainable, Realistic, and Tangible, and that they would fulfill the requirements established in the standard. Again, the goals were established as a flow chart or roadmap mentioned previously.

The researcher utilized suggestions from the committee, and formulated them to make sure they met the above mentioned criteria. The goals established by the committee included:

1. Physical evaluation performed on all personnel by physical or licensed health care professional (PLHCP), and associated documentation completed by December 31, 1998.
2. SCBA mask fit test performed on all personnel, proper fitting masks issued, and associated documentation completed by December 31, 1998.

3. Breathing air quality is tested to meet the appropriate grade, and associated documentation to support that completed by December 31, 1998.

4. Practices and procedures which address any area of the standard are evaluated, revised as needed, and implemented by December 31, 1998.

5. All requirements for selecting, use and training with respirators to properly address the standard and associated documentation is completed by December 31, 1998.

6. All requirements for respirator maintenance and related documentation completed by December 31, 1998.

7. Written respiratory protection program is place by December 31, 1998.

8. Instrument for evaluation of program developed by May 1, 1999.

Task 2.5 is to assess and select the methods of change to be employed. The text outlines four methods of change and describes the characteristics of each of them. The methods listed include:

- A. The Technical method
- B. The Structural method
- C. The Managerial method and
- D. The People method.

The committee decided to utilize not only one approach, but to utilize a combination of approaches to suit each need or set of circumstances. The technical method involves altering the way services are provided and an organization's output is produced. The committee felt this would involve some training issues, fire attack policies, air monitoring procedures, and documentation procedures for

several operational areas. They also felt that changes in practices and procedures would be necessary, thereby making this one of the methods utilized as a tool for change implementation.

The structural method, which involves a change of focus or altering the structure of specific jobs, was also seen as one of the methods to be utilized for change implementation. Modifying the organizational structure basically involves changes to the structural complexity, formalization, centralization, or coordination. Specific changes in the complexity of the organization could possibly involve formalization of procedures to utilize the incident management system and assign a safety officer to every incident. Formalization is the degree to which rules and regulations govern personnel behaviors. Procedures outlined in the standard apply to all personnel on the department. Personnel must recognize that this standard is law and not simply a set of recommendations.

Centralization involves the degree to which personnel are allowed to participate in the decision making process. Utilizing a committee approach allows personnel to have much more involvement in this process. While it should not be seen as a way to do things more quickly, it has potential to produce a much better finished product that everyone will be happy with. Coordination is the process of integrating differential resources and activities in a unity of effort. In this case, labor and management are working together for the betterment of all involved. Compliance with requirements of this standard will no doubt create a safer work environment for all department personnel. Increased safety will be in effect at all times, and will not be limited to situations where personnel are working in atmospheres considered immediately dangerous to life or health.

The managerial method of change involves modifying reward systems and enhancing cooperation between management and labor. Since strict adherence to city policies and items agreed to

by contract make it very difficult, if not illegal to offer rewards such as time-off, benefits or pay incentives, this was not seen by the committee to be a feasible alternative. Managing change utilizing this method was also not seen as being conducive to changes of this nature, and could establish an unfavorable precedent.

The people method of change involves actively engaging the people who work in the organization. Again, encouraging line officers to seek training opportunities will bring about increased professionalism among the rank and file, and the organization as a whole. Educating all personnel in all aspects of the standard will cross over to other parts of the job, and help them to be more well rounded in their knowledge base.

Task 2.6, the final task in the process, was to assess and select techniques to promote change. Listed in the text were four methods which included the following:

- A. Facilitative
- B. Informational
- C. Attitudinal and
- D. Political

Again, the committee felt there was not one technique to be utilized, but a combination of techniques should be used to fit the circumstances. The facilitative technique involves members of management having the authority to facilitate the change, but seeking significant interaction with the personnel who will be affected. In this case, management not only has the authority to facilitate changes, but they also maintain the responsibility to make sure all necessary changes are implemented.

The informational technique requires that managers demonstrate the rationale for change by educating and providing factual information to the personnel. The assumption is that personnel will act rationally, recognize the problem, and come to a mutually agreeable solution. This was noted to be particularly important when employees need extensive information, but less effective when change must be implemented quickly. A great deal of information would be needed for changes to be properly implemented in this case, however, several of the changes would also need to be made quickly. Fortunately, the techniques and particular aspects of the standard are not new to most personnel, and the information available to them should be fairly self-explanatory.

The attitudinal technique relies on the use of persuasive messages to ultimately produce changes in behavior. This is particularly important when change is extensive or will affect a large majority of the personnel. It is not as important when change is minor, or must be implemented quickly. In this case, changes may need to be extensive in some areas. While many of the proposed changes will affect all personnel, there are some areas of change that affect department administration only. Changes will also needed to be implemented rather quickly.

The political technique involves manipulating resources and is more of a power type technique. This was not utilized since it was seen as being a negative technique and would not prove to be beneficial to the department or in development of this document.

DISCUSSION

The fire service has always been considered a dangerous occupation with personnel being injured or killed in the line of duty on a regular basis. We must not continue to accept this as an inherent part of the job. We must be accountable for our own actions, and do all we can to decrease the

number of service related injuries and deaths. Who do we expect will keep us from killing ourselves if we continue to accept these tragedies as commonplace? We must rise to the challenge of providing for the safety and well being of fire service personnel by developing programs designed for that purpose. As in any situation where new standards cause changes, there will be no doubt be questions and unforeseen circumstances that call for some refining, but by utilizing a systematic approach to overall safety, the entire industry will stand to benefit.

A single solution may not be possible for a department to be effective and efficient in overall operations. It will take a combination of efforts to make this occupation safer for everyone.

A more holistic approach may be required. We can't afford to have a solution to a problem that has a thousand variables. The solution may be a combination of all of the factors we've talked about previously, such as physical conditioning, training, preservation of decision-making processes, adequate protective clothing design that takes care of physical limitations, and even embracing the idea that some of our problems shouldn't be attacked with physical staffing resources. (Coleman, p. 29).

Over the course of developing this document, several elements outlined in the standard were found to be applicable to the operations of the Yukon Fire Department. While other agencies may be impacted by other parts of the standard, the researcher focused attention to those areas of the standard that affect his agency. The standard is possibly better known as the "two/in two out" rule since that is the area that has caused the most controversy and received the most publicity. The rule is a result of firefighters being killed while they operated inside a burning building where outside rescue teams were not prepared to execute rescue operations.

In a survey conducted by the researcher, some rather unexpected results were revealed. Issues that the researcher expected would be addressed by other departments included changes to their procedures for interior attack, performing medical evaluations, use of rapid intervention teams, mask fit testing, and development of a written program to address the standard. Other items on the survey where the researcher thought there would be a larger impact included changes to training with breathing apparatus, Incident Command and Accountability changes, maintenance procedures for breathing apparatus regulators, use of mutual aid or automatic aid, and evaluation of the written program. The goals developed by the researcher and committee were written to address issues they felt would also be addressed by other departments.

The best way for us to ensure the safety of our personnel is to take a holistic approach to training programs based on the standard, and design them to address operational issues the department faces. Several articles found during the literature review indicated one way to deal with manpower requirements includes more aggressive use of mutual aid and pro-active use of automatic aid early in an incident. This could facilitate the use of rapid intervention teams, also known as firefighter assistance and search teams, which could easily be supplied by automatic or mutual aid departments.

We need to educate the public and elected officials about “two-in / two-out” ramifications. Changes in operational procedures give a line officer the opportunity and flexibility he or she will need to make battlefield decisions in fire combat situations. “With the adoption of this new standard, departments now have the option of waiting for the arrival of additional personnel. It is about time we put safety ahead of bravado.” (Baltic, p. 44). The department’s policy on fire attack should be revised, and changed as necessary to address compliance with the standard.

Decisions made by line officers will have an obvious impact on how an incident is managed. Personnel will be faced with life and death situations, and training officers need to develop and implement realistic training scenarios that reflect the department's true capabilities. This should ensure all personnel are prepared and understand their responsibilities at an actual incident. Our goal should be to be in compliance, but more importantly to be safe. The success of any department's training program will be the determining factor in ensuring a safer workplace in a very dangerous occupation. "Luck has always favored the prepared. The more hazardous the occupation, the more time, effort and energy are needed to reduce the number of casualties." (Coleman, p. 28.) The department's training program should be geared to instruct personnel to be effective and efficient, but it should also prepare firefighters to act rapidly and correctly when things go wrong.

The new standard forces departments to have a plan of action to address a number of potential problems with regard to respiratory protection and overall safety of their personnel. Even if departments are doing all the things required in the standard, it stands to increase the awareness of personnel to utilize the resources necessary to enhance their own personal safety.

As the deadline for compliance with the standard approached, the researcher attended the National Fire Academy course "Strategic Management Of Change". The change management model introduced in the course was utilized extensively to produce this document. A committee of personnel employed by the Yukon Fire Department assisted in creating a plan to bring the department into compliance. The model will continue to be followed throughout the change process as well as in the future when changes must be implemented.

Two issues of compliance that will be a major factor in management of change include development of a time line for compliance, and estimating costs for budget purposes. If costs are too much for a budget to handle in a single year, a department must plan ahead and address the issue in following year's budget projections. Addressing these issues could have an impact on the other operations of the department by depleting funds that may have been designated for other projects. The researcher developed a check-sheet to chart his agency's compliance with the standard. This has been an invaluable tool to help the department line out priorities, estimate costs, and document expenses.

And, even though it does not deal directly with staffing, the combination of the new OSHA rule and NFPA 1500 can be used as further evidence that two and three person fire companies have problems meeting standards and can not operate as effectively or as safely as companies with four or five firefighters. (Bruno, p. 10).

Initial reaction is that the standard is too strict and too complex to comprehend and comply with. The standard takes some of the decision making out of the minds of company officers. Now, no interior attack can be made without at least 4 personnel on the scene, all ready for action.

Critical decisions will need to be made by the company officer. In addition to deciding how to attack a fire, the company officer must make sure an adequate number of personnel and other resources are in place prior to committing a unit for interior attack. "Your personnel will be faced with these situations, so you need to create realistic training scenarios that reflect your department's true capabilities and ensure that everyone understands their responsibilities." (Edwards, p. 44).

RECOMMENDATIONS

Based upon observations made during the development of this document, the researcher is able to make several recommendations to help his department reach a high level of compliance with the standard. With information gathered from several sources, recommendations were divided into four categories the researcher felt were appropriately related.

Several common areas of concern were highlighted during the process of conducting surveys, the literature review, and work done by the committee developed by the researcher. These concerns were grouped into categories the researcher felt were related. While some of the issues overlapped into more than one category, most involved separate concerns. Some changes to the way the Yukon Fire Department was operating at the outset of the study have already been made. Other changes continue to be made at this writing, while still others will be made in the future.

Recommendations to be considered by the Yukon Fire Department include:

- A. Changes to operating practices and procedures,
- B. Changes to the department training program,
- C. Development and evaluation of the written plan, and
- D. Budget considerations.

The one area most sources felt needs to be addressed in an effort to reach compliance with the standard included revisions to operating practices and procedures. The researcher recommends changes in the Yukon Fire Department operating procedures should be made to address the new standard. Simple things such as adding definitions of environments considered Immediately Dangerous to Life or Health to training outlines would be quickly done. Developing a policy to address “two-in /

two-out” requirements should be drafted and adopted as part of the department procedure manual.

Contacts with fire departments in the Oklahoma City Metro area should be utilized as a resource for drafting a procedure, as well as providing automatic or mutual aid.

The researcher recommends more frequent use of mutual aid, and aggressively seeking automatic aid agreements with departments in the immediate area. This will go hand in hand with the Incident Management System and accountability system on a multi-jurisdictional incident. A group of six area fire departments and the ambulance service provider in the area have already developed a plan to begin with metro area response system for automatic aid. Mutual aid has already been established, and has worked very well for quite some time. Automatic aid would be the next logical progression.

Revisions to the department training program should also be addressed. Any training topic area dealing entirely or in part with requirements of the standard should be revised with wording to reflect compliance with the new standard. Training on newly revised practices and procedures, two-in / two-out, self contained breathing apparatus, incident management system, accountability, and the standard itself should be addressed.

Public education programs should be revised to include efforts to inform the public of changes that may affect their perception of how we go about doing our job. Questions such as why there are apparatus from other departments in our community for training or emergencies and why we are waiting outside a burning building for a back-up crew could arise. Most changes will be hard for the general public to recognize, but if fire loss figures increase due to delays in interior attack, the department will no doubt need to have an explanation.

Development of a written plan to address requirements of the standard is another recommendation currently being addressed by the researcher. Recommendations to help the department should be solicited from all levels of the organization. This could most easily be done by maintaining the original committee utilized to develop the plan outlined in this document, and by continuing to request input from them. The committee should continue to gather information through additional research, literature reviews and surveys. All information collected, ideas generated, or resources located should be documented and then shared with others upon request.

The department or committee should continue to follow the change management model used to develop this document as a road map to keep themselves on track in the future. By utilizing the same four-phase model to manage changes, a consistent pattern will be maintained. The department should also continue to utilize the check-list found in Appendix “B” of this report to document their progress toward compliance.

Budgeting for equipment and other expenses to achieve and then maintain their level of compliance will be an ongoing concern. Planning ahead for major expenses such as improved filtration system for breathing air compressor or gas monitors for use in confined spaces will require a great deal of justification. The check-list used to track the department’s level of compliance can easily be used to document expenses, and project future needs in budgeting. The respiratory protection standard, similar to NFPA-1500 when it was first introduced, has been utilized by more than a few fire chiefs as a tool with administrative decision makers, city managers, council groups, and funding sources and municipalities. They use this nationally recognized standard to help justify requests for much needed

equipment or staffing. It does not always need to be used as a main point, but it could help to add credibility as well as urgency to a request. It has been mandated to us and we simply must comply.

The department should continue to seek funding through normal budgetary channels, as well as other more creative avenues. Local civic groups or other charitable organizations have been generous in the past, and should continue to pay dividends for equipment purchases in the future. Local utility companies are many times open to providing contributions of surplus equipment or other valuable resources. This is especially true when the fire department can show a direct benefit to the company in an emergency response situation.

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APPENDIX A

SURVEY AND RAW DATA

Yukon Fire Department

RESPIRATORY PROTECTION STANDARD - COMPLIANCE SURVEY

General information:

Department name: _____.

Department Address: _____.

Phone number: _____ Fax number: _____.

Name and rank of person completing survey: _____.

Total number of personnel: _____ Number of manned stations: _____.

Has the total number of personnel on your department changed in the past two years?

Yes _____ No _____ Increased _____ Decreased _____.

If yes, was the change in personnel to accommodate compliance with the standard?

Yes _____ No _____ Not sure _____.

Number of personnel normally assigned to engine company? _____.

Has the number of personnel assigned to an engine company changed in the past two years?

Yes _____ No _____ Increased _____ Decreased _____.

If yes, was the change in personnel to accommodate compliance with the standard?

Yes _____ No _____ Not sure _____.

Compliance survey questions:

1. Is your department in compliance with the new standard?

Full compliance _____ Partial compliance _____ Not sure _____.

2. How did you evaluate your department's level of compliance with the standard?

Developed an instrument in house (chart, graph, matrix, check list, etc.) _____.

Utilized an instrument developed by another department or other source _____. Utilized an outside or private consultant _____.

In-house review of policies and procedures _____.

Did not evaluate our level of compliance _____.

3. Below is a list of topics addressed in the new standard. List the areas of your operations or procedures that have been changed as a result of the new standard. Check all that apply.

<input type="checkbox"/> Interior fire attack	<input type="checkbox"/> Ventilation procedures
<input type="checkbox"/> Use of respirators	<input type="checkbox"/> Respirator maintenance and care
<input type="checkbox"/> Respirator training	<input type="checkbox"/> Apparatus minimum staffing
<input type="checkbox"/> Breathing air quality testing	<input type="checkbox"/> Respirator mask fit testing
<input type="checkbox"/> Physical fitness program	<input type="checkbox"/> Operating in IDLH environments
<input type="checkbox"/> Medical evaluations	<input type="checkbox"/> Deployment of backup hose lines
<input type="checkbox"/> Use of rapid intervention teams	<input type="checkbox"/> Confined space entry or rescue
<input type="checkbox"/> Changes in equipment	<input type="checkbox"/> Written respiratory protection program

Use of cartridge respirators ☐ Selection of respirators

<input type="checkbox"/> Documentation procedures	<input type="checkbox"/> Program evaluation
<input type="checkbox"/> Incident command procedures	<input type="checkbox"/> Mutual aid response procedures
<input type="checkbox"/> Incident accountability procedures	<input type="checkbox"/> Other _____.
<input type="checkbox"/> Other _____.	<input type="checkbox"/> Other _____.

Comments: _____.

_____.

Thank you again for your cooperation with this matter. Please return the survey form to me by December 7, 1998.

Please furnish me with a copy of the finished project. Yes _____ No _____.

Yukon Fire Department

RESPIRATORY PROTECTION STANDARD - COMPLIANCE SURVEY

General information:

Department name: All departments surveyed completed and returned the survey forms.

Department Address: All departments completed their mailing address.

Phone number: All depts. included phone # Fax number: All depts. included fax #.

Name and rank of person completing survey: All departments included this information.

Total number of personnel: 17 – 89 (avg 41.3) Number of manned stations: 1-5 (avg 2.4).

Has the total number of personnel on your department changed in the past two years?

Yes 2 No 7 Increased 0 Decreased 2.

If yes, was the change in personnel to accommodate compliance with the standard?

Yes _____ No 2 Not sure 0.

Number of personnel normally assigned to engine company? 2-5 (avg 3).

Has the number of personnel assigned to an engine company changed in the past two years?

Yes 1 No 7 Increased 1 Decreased 0.

If yes, was the change in personnel to accommodate compliance with the standard?

Yes 1 No 1 Not sure 0.

Compliance survey questions:

1. Is your department in compliance with the new standard?

Full compliance 5 Partial compliance 5 Not sure 0.

2. How did you evaluate your department's level of compliance with the standard?

Developed an instrument in house (chart, graph, matrix, check list, etc.) 6.

Utilized an instrument developed by another department or other source 2. Utilized an outside or private consultant 2.

In-house review of policies and procedures 7.

Did not evaluate our level of compliance 0.

3. Below is a list of topics addressed in the new standard. List the areas of your operations or procedures that have been changed as a result of the new standard. Check all that apply.

<u> 7 </u> Interior fire attack	<u> 0 </u> Ventilation procedures
<u> 0 </u> Use of respirators	<u> 1 </u> Respirator maintenance and care
<u> 2 </u> Respirator training	<u> 0 </u> Apparatus minimum staffing
<u> 4 </u> Breathing air quality testing	<u> 8 </u> Respirator mask fit testing
<u> 2 </u> Physical fitness program	<u> 3 </u> Operating in IDLH environments
<u> 6 </u> Medical evaluations	<u> 4 </u> Deployment of backup hose lines
<u> 6 </u> Use of rapid intervention teams <u> 1 </u>	Confined space entry or rescue
<u> 1 </u> Changes in equipment	<u> 9 </u> Written respiratory prot. Program
<u> 0 </u> Use of cartridge respirators	<u> 1 </u> Selection of respirators
<u> 6 </u> Documentation procedures	<u> 4 </u> Program evaluation
<u> 2 </u> Incident command procedures <u> 2 </u>	Mutual aid response procedures
<u> 4 </u> Incident accountability procedures	<u> 0 </u> Other _____.
Other _____	Other _____.

Comments: _____.

_____.

Thank you again for your cooperation with this matter. Please return the survey form to me by December 7, 1998.

Please furnish me with a copy of the finished project. Yes 6 No 2 .

APPENDIX B

COMPLIANCE CHART

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
1910.134a Permissible practice					
a.1 – In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination.					
a.2 – Respirators shall be provided by the employer when such equipment is necessary to protect the health of the employee.					
1910.134b Definitions					
1910.134c Respiratory protection program					
c.1 - In any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required by the employer the employer shall establish and implement a written respiratory protection program with worksite-specific procedures.					
c.1.i – Procedures for selecting respirators for use in workplace.					
c.1.ii – Medical evaluations of employees required to use respirators.					

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
c.1.iii – Fit testing procedures					
c.1.iv – Procedures for proper use of respirators in routine and reasonable foreseeable emergency situations					
c.1.v – Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and other wise maintaining respirators.					
c.1.vi – Procedures to ensure adequate air quality, quantity, and flow of breathing air.					
c.1.vii - Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations					
c.1.viii - Training of employees on the proper use of respirators					
c.1.ix – Procedure for regularly evaluating the effectiveness of the program.					
c.2 – Where respirator use is not required					

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
c.2.i – An employer may provide respirators at the request of employees or permit employees to use their own respirators, if the employer determines that such respirator use will not in itself create a hazard.					
c.2.ii – In addition, the employer must establish and implement those elements of a written respiratory protection program necessary to ensure that any employee using a respirator voluntarily is medically able to use that respirator, and that the respirator is cleaned, stored, and maintained so that its use does not present a health hazard to the user.					
c.3 – The employer must designate a qualified program administrator					
c.4 – the employer shall provide respirators, training, and medical evaluations at no cost to the employee.					
1910.134d - Selection of respirators					
d.1 – General requirements					
Content	Compliance	Partial	Expected	Estimated	Remarks

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

		Compliance	Compliance Date	Cost	
d.1.i – The employer shall select and provide an appropriate respirator based on the respiratory hazards to which the worker is exposed and workplace and user factors that affect respirator performance and reliability					
d.1.ii – The employer shall select a NIOSH-certified respirator. The respirator shall be used in compliance with the condition of its certification.					
d.1.iii - The employer shall identify and evaluate the respiratory hazards in the workplace.					
d.1.iv - The employer shall select respirators from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.					
d.2 – Respirators for IDLH atmospheres					
d.2.i – The employer shall provide the following respirators for employee use in IDLH atmospheres					
Content	Compliance	Partial	Expected	Estimated	Remarks

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

		Compliance	Compliance Date	Cost	
d.2.i.a - A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty Minutes, or					
d.2.i.b - A combination full facepiece pressure demand supplied-air respirator with auxiliary self-contained air supply.					
d.2.ii – Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.					
d.2.iii - All oxygen-deficient atmospheres shall be considered IDLH.					
d.3 – Respirators for atmospheres that are not IDLH.					
d.3.i – The employer shall provide a respirator that is adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonable foreseeable emergency situations.					
Content	Compliance	Partial	Expected	Estimated	Remarks

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

		Compliance	Compliance Date	Cost	
d.3.i.a - Assigned protection factors					
d.3.i.b - Maximum use concentration					
d.3.ii – The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.					
d.3.iii - For protection against gases and vapors, the employer shall provide:					
d.3.iii.a - An atmosphere-supplying respirator, or					
d.3.iii.b - An air-purifying respirator, provided that:					
d.3.iii.1 - The respirator is equipped with an end-of-service-life indicator certified by NIOSH					

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
d.3.iii.2 - If there is no ESLI appropriate for conditions in the employer's workplace, the employer implements a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before ESLI					
d.3.iv – For protection against particulate, the employer shall provide:					
d.3.iv.a - An atmosphere-supplying respirator, or					
d.3.iv.b An air-purifying respirator equipped with a filter certified by NIOSH as a high efficiency particulate, or					

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
d.3.iv.c - For contaminates consisting primarily of particles with mass median aerodynamic diameters of at least 2 micrometers, and air purifying respirator equipped with and filter certified for particulate by NIOSH.					
1910.134e - Medical evaluation					
e.1 – General. The employer shall provide a medical evaluation to determine the employee’s ability to use a respirator, before the employee is fit tested or required to use the respirator in the workplace.					
e.2 – Medical evaluation Procedures.					
e.2.i – The employer shall identify a physician or other licensed health care professional to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire.					

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
e.2.ii – The medical evaluation shall obtain the information requested by the questionnaire in sections 1 and 2 part A of Appendix C of this section.					
e.3 - Follow-up medical examination					
e.3.1 – The employer shall ensure that a follow-up medical examination is provided for an employee who gives a positive response to any question among question 1 through 8 in section 2 part A of appendix C or whose Initial medical examination demonstrates the need for a follow-up medical examination.					
e.4 – Administration of the medical questionnaire and examination.					
e.4.i – The medical questionnaire and examinations shall be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee.					

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
e.5 – Supplemental information for the PLHCP					
e.5.i – The following information must be provided to the PLHCP before the PLHCP makes a recommendation concerning an employees ability to use a respirator:					
e.5.i.a - The type and weight of the respirator to be used by the employee;					
e.5.i.b - The duration and frequency of respirator use(including use for rescue and escape)					
e.5.i.c - The expected physical work effort					
e.5.i.d - Additional protective clothing and equipment to be worn					
e.5.i.e - Temperature and humidity extremes that may be encountered					

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
e.5.ii – Any supplemental information provided previously to the PLHCP regarding an employee need not be provided for a subsequent medical evaluation if the information and the PLHCP remain the same.					
e.5.iii - The employer shall provide the PLHCP with a copy of the written respiratory protection program and a copy of this section.					
e.6 – Medical determination. In determining the employees ability to use a respirator, the employer shall:					
e.6.i – Obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP. The recommendation shall provide only the following information					

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Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
e.6.i.a - Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator					
e.6.i.b - The need, if any, for follow-up medical evaluations;					
e.6.i.c - A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.					
e.6.ii – If the respirator is a negative pressure respirator and the PLHCP finds a medical condition that may place the employee's health at increased risk if the respiratory is used, the employer shall provide a PAPR if the PLHCP medical evaluation finds that the employee can use such a respirator.					

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
e.7 – Additional medial evaluations					
e.7.i – An employee reports medical signs or symptoms that are related to ability to use a respirator;					
e.7.ii – A PLHCP, supervisor, or the respiratory program administrator informs the employer that an employee needs to be reevaluated;					
e.7.iii – Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or					
e.7.iv - A change occurs in workplace conditions that may result in substantial increase in the physiological burden placed on an employee.					
1910.134f - Fit testing					

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
f.1 - The employer shall ensure that employees using a tight-fitting facepiece respirator pass an appropriate qualitative test (QLFT), or quantitative fit test (QNFT) as stated in this paragraph.					
f.2 - the employer shall ensure that an employee using a tight-fitting facepiece respirator is fit tested prior to initial use of the respirator, whenever a different respirator facepiece (Size, style, model or make) is used, and at least annually thereafter.					
f.3 – The employer shall conduct an additional fit test whenever the employee reports, or the employer, OLHCP, supervisor, or program administrator makes visual observations of changes in the employee’s physical condition that could affect respirator fit, such condition include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.					

Yukon Fire Department
1910.134 Respiratory Protection Standard
Compliance Check List

Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
f.4 - If after passing a QLFT or QNFT, the employee subsequently notifies the employer, program administrator supervisor, or PLHCP that the fit of the respirator is unacceptable, the employee shall be given a reasonable opportunity to select a different respirator facepiece and to be re-tested.					
f.5 – The fit test shall be administered using an OSHA-accepted QLFT or QNFT protocol. The OSHA-accepted QLFT and QNFT protocols and procedures are contained in Appendix A of this standard.					
f.6 – QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.					
f.7 - If the fit factor is equal to or greater than 100 for tight-fitting half facepiece or equal to or greater than 500 for tight-fitting full facepiece, the QNFT has been passed with that respirator.					

Yukon Fire Department
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Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
f.8 - Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode (positive or negative pressure) of operation that is used					
f.8.1.i - Qualitative fit testing of these respirators shall be accomplished by temporarily converting the respirator user's actual facepiece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator facepiece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator facepiece					

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f.8.1.ii – Quantitative fit testing of these respirators shall be accomplished by modifying the facepiece to allow sampling inside the facepiece in the breathing zone of the user midway between the nose and mouth. This requirement shall be accomplished by installing a permanent sampling adapter designed to temporarily provide a means of sampling air from inside the facepiece.					
f.8.1.iii - Any modifications to the respirator facepiece for fit testing shall be completely removed and the facepiece restored to NIOSH-approved configuration, before that facepiece can be used.					
1910.134g - Use of respirators					
g.1. – facepiece seal protection					

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Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
g.1.i – The employer shall not permit respirators with tight-fitting face piece to be worn by employees who have:					
g.1.i.a - Facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function; or					
g.1.i.b - Any condition that interferes with the face-to-facepiece seal or valve function					
g.1.ii – If an employee wears corrective glasses or goggles or other personal protective equipment the employer shall ensure that such equipment is worn in a manner that does not interfere with the seal of the facepiece to the face of the user.					

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g.1.iii - For all tight-fitting respirators, the employer shall ensure that employees perform a user seal check each time they put on the respirator using the procedures in appendix B-1 or procedures recommended by the respirator manufacturer that the employer demonstrates are as effective as those in appendix B-1 of this section.					
g.2 – Continuing respirator effectiveness					
g.2.i – Appropriate surveillance shall be maintained of work area, conditions and degree of employee exposure or stress. When there is a change in work area conditions, employee exposure or stress that may affect respirator effectiveness, the employer shall reevaluate the continued effectiveness of the respirator					
g.2.ii – The employer shall ensure that employees leave the respirator use area:					

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g.2.ii.a - To wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use; or					
g.2.ii.b - If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece. Or					
g.2.ii.c - To replace the respirator or the filter, cartridge, or canister elements.					
g.2.iii – If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, the employer must replace or repair the respirator before allowing the employee to return to the work area.					
g.3 – Procedures for IDLH Atmospheres. For all IDLH atmospheres the employer shall ensure that:					

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g.3.i – One employee or, when needed, more than one employee is located outside the IDLH atmosphere:					
g.3.ii – Visual, voice, or signal line communication is maintained between the employees in the IDLH atmosphere and the employee located outside the IDLH atmosphere					
g.3.iii - The employees located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue.					
g.3.iv - The employer or designee is notified before the employees located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue.					
g.3.v – The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation.					

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Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
g.3.vi - Employee located outside the IDLH atmosphere are equipped with:					
g.3.vi.a - Pressure demand or other positive pressure SCBAs or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either					
g.3.vi.b - Appropriate retrieval equipment for removing the employee who enters these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee and would not increase the overall risk resulting from entry; or					
g.3.vi.c - Equivalent means for rescue where retrieval equipment is not required under paragraph g.3.vi.b					
g.4 – Procedures for interior structural fire fighting.					

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Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
g.4.i – At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;					
g.4.ii – At least two employees are located outside the IDLH atmosphere; and					
g.4.iii - All employees engaged in interior structural fire fighting use SCBA. (see notes one and two in standard)					
1910.134h - Maintenance and care of respirators.					
h.1 – Cleaning and disinfecting. The employer shall provide each respirator user with a respirator that is clean, sanitary, and in good working order, according to appendix B-2 of this standard.					
h.1.i – Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition.					
Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks

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h.1.ii – Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals.					
h.1.iii - Respirators maintained for emergency use shall be cleaned and disinfected after each use; and					
h.1.iv - Respirators used in fit testing and training shall be cleaned and disinfected after each use.					
h.2 – Storage, The employer shall ensure that respirators are stored as follows:					
h.2.i – All respirators shall be stored to protect them from damage, contamination, dust, sunlight extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the facepiece and exhalation valve.					
h.2.ii – In addition to the requirements of paragraph h.2.i of this section, emergency respirators shall be:					

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h.2.ii.a - Kept accessible to the work area;					
h.2.ii.b - Stored in compartments or in covers that are clearly marked as containing emergency respirators; and					
h.2.ii.c - Stored in accordance with any applicable manufacturer instructions.					
h.3 – Inspection					
h.3.i – The employer shall ensure that respirators are inspected as follows:					
h.3.i.a - All respirators used in routine situations shall be inspected before each use and during cleaning.					

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Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
h.3.i.b - All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use; and					
h.3.i.c - Emergency escape-only respirators shall be inspected before being carried into the workplace for use.					
h.3.ii – The employer shall ensure that respirator inspections include the following;					

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Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
h.3.ii.a - A check of respirator function, tightness of connections and the condition of the various parts including, but not limited to, the facepiece, head straps, valves, connecting tube and cartridges, canisters or filters;					
h.3.ii.b - A check of elastomeric parts for pliability and signs of deterioration.					

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Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
h.3.iii – In addition to the requirements of paragraphs h.3.i and h.3.ii of this section, self contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be maintained in a full charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. The employer shall determine that the regulator and warning devices function properly.					
h.3.iv – For respirators maintained for emergency use, the employer shall:					

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h.3.iv.a - Certify the respirator by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action and a serial number or other means of identifying the inspected respirator; and					
h.3.iv.b - Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.					

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Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
h.4 – Repairs- The employer shall ensure that respirators that fail an inspection or are otherwise found to be defective are removed from service, and are discarded or repaired or adjusted in accordance with the following procedures.					
h.4.i – Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH-approved parts designed for the respirator;					
h.4.ii – Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs. To be performed; and					
h.4.iii - Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.					

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1910.134i - Breathing air quality and use					
Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
i.1 - The employer shall ensure that compressed air, compressed oxygen, liquid air, and liquefied oxygen used for respiration accords with the following specifications;					
i.1.i – Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and					
i.1.ii – Compressed air shall meet at least the requirements for grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include.					
i.1.ii.a - Oxygen content of 19.5%-23.5%					
i.1.ii.b – Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less					
i.1.ii.c - Carbon monoxide content of 10 PPM or less					
i.1.ii.d - Carbon dioxide content of 1,000 PPM or less					

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i.1.ii.e - Lack of noticeable odor.					
Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
i.2 - The employer shall ensure that compressed oxygen is not used in atmospheres-supplying respirators that have previously used compressed air					
i.3 - The employer shall ensure that oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.					
i.4 - The employer shall ensure that cylinders used to supply breathing air to respirators meet the following requirements					
i.4.i – Cylinders are tested and maintained as prescribed in the shipping container specification regulations of the department of transportation (49 CFR part 173 and part 1780)					
i.4.ii – Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air					

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i.4.iii - The moisture content in the cylinder does not exceed a dew point of - 50 degrees F at 1 atmosphere.					
i.5 - The employer shall ensure that compressors used to supply breathing air to respirators are constructed and situated so as to:					
i.5.i – Prevent entry of contaminated air into the air-supply system;					
i.5.ii – minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F below the ambient temperature.					
i.5.iii – Have suitable in-line air purifying sorbent beds and filters to further endure breathing air quality. Sorbent beds and filters shall be maintained and replaced or refurbished periodically following the manufacturers instructions.					

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Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
i.5.iv – Have a tag containing the most recent change date and the signature of the person authorized by the employer to perform the change. The tag shall be maintained at the compressor.					
i.6 - For compressors that are not oil-lubricated, the employer shall ensure that carbon monoxide levels in the breathing air do not exceed 10 PPM.					
i.7 - For oil lubricated compressors, the employer shall use a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 PPM					
i.8 - The employer shall ensure that breathing air couplings are incompatible with outlets for nonrespirable work-site air or other gas systems. No asphyxiating substance shall be introduced into breathing air lines.					
Content	Compliance	Partial	Expected	Estimated	Remarks

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i.9 - The employer shall use breathing gas containers marked in accordance with the NIOSH respirator certification standard, 49 CFR part 84.					
1910.134j – <i>Identification of filters, cartridges, and canisters.</i> The employer shall ensure that all filters cartridges and canisters used in the workplace are labeled and color coded with the NIOSH approval label and that the label is not removed and remains legible					
1910.134k - <i>Training and information.</i> This paragraph requires the employer to provide effective training to employees who are required to use respirators. The training must be comprehensive, understandable and recur annually, and more often if necessary. This paragraph also requires the employer to provide the basic information on respirators in Appendix D of this section to employees who wear respirators when no required by this section or by the employer to do so.					

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Content	Compliance	Partial Compliance	Expected Compliance Date	Estimated Cost	Remarks
k.1 - The employer shall ensure that each employee can demonstrate knowledge of at least the following:					
k.1.i – Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator.					
k.1.ii – What the limitations and capabilities of the respirator are					
k.1.iii - How to use the respirator effectively in emergency situations, including situations in which the respirator malfunction					
k.1.iv - How to inspect, put on and remove, use, and check the seals of the respirator.					
k.1.v – What the procedures are for maintenance and storage of the respirator.					
k.1.vi - How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.					
k.1.vii - The general requirements of this section.					

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k.2 - The training shall be conducted in a manner that is understandable to the employee.					
k.3 - The employer shall provide the training prior to requiring the employee to use a respiratory in the workplace.					
k.4 - An employer who is able to demonstrate that a new employee has received training within the last 12 months that addresses the elements specified in paragraph k.1.i through vii is not required to repeat such training provided that, as required by paragraph k.1 the employee can demonstrate knowledge of those elements. Previous training not repeated initially by the employer must be provided no later than 12 months from the date of the previous training.					
k.5 – Retraining shall be administered annually, and when the following situations occur:					
k.5.i - Changes in the workplace or the type of respirator render previous training obsolete.					

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k.5.ii – Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or					
k.5.iii - Any other situation arises in which retraining appears necessary to ensure safe respirator use.					
k.6 - The basic advisory information on respirators, as presented in appendix D of this section shall be provided by the employer in any written or oral format, to employees who wear respirators when such use is not required by this section or by the employer.					
1910.134l - Program evaluation					
l.1 - The employer shall conduct evaluations of the workplace as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.					

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l.2 - The employer shall regularly consult employees required to use respirators to assess the employees views on program effectiveness and to identify any problems. Any problems that are identified during this assessment shall be corrected. Factors to be assessed include, but are not limited to:					
l.2.i - Respirator fit (including the ability to use the respirator without interfering with effective workplace performance.)					
l.2.ii - Appropriate respirator selection for the hazards to which the employee is exposed.					
l.2.iii - Proper respirator use under the workplace conditions the employee encounters					
l.2.iv - Proper respirator maintenance.					
1910.134m - Recording Keeping					
m.1 – Medical evaluation. Records of medical evaluations required by this section must be retained and made available in accordance with 29 CFR 1910.120					

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m.2 - Fit testing					
m.2.i - The employer shall establish a record of the qualitative and quantitative fit tests administered to an employee including:					
m.2.i.a - The name or identification of the employee tested					
m.2.i.b - Type of fit test performed					
m.2.i.c – Specific make, model, style, and size of respirator tested					
m.2.i.d - Date of test					
m.2.i.e - The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results					
m.2.ii - Fit test records shall be retained for respirator users until the next fit test is administered					
m.3 - A written copy of the current respirator program shall be retained by the employer					

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m.4 – Written materials required to be retained under this paragraph shall be made available upon request to affected employees and to the assistant secretary or designee for examination and copying.					
1910.134n – dates					
h.1 – effective date. This section is effective April 8, 1998. The obligation imposed by this section commence on the effective date unless otherwise noted in this paragraph. Compliance with obligations that do not commence on the effective shall occur no later than the applicable start-up date					
n.2 – Compliance dates. All obligations of this section commence on the effective date except as follows:					
n.2.i - The determination that a respirator use is required September 8,1998					
n.2.ii - Compliance with provisions of this section for all other provisions shall be completed no later than October, 5 1998					
Content	Compliance	Partial	Expected	Estimated	Remarks

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n.3 - The provisions of 29 CFR 1910.134 and 29 CFR 1926.103, contained in the 29 CFR parts 1900 – 1910.99 and the 29 CFR part 1926 editions, revised as of July, 1 1997 are in effect and enforceable until October 5, 1998, or during any administrative or judicial stay of the provisions of this section					
n.4 – Existing respiratory protection programs. If, in the 12 month period preceding April, 1998 the employer has conducted annual respirator training, fit testing, respirator program evaluation, or medical evaluations, the employer may use the results of those activities to comply with the corresponding provisions of this section, providing that these activities were conducted in a manner that meets the requirements of this section.					
1910.134o – Appendices					
o.1 – Compliance with appendix A, Appendix B-1, Appendix B-2, and Appendix C of this section is mandatory					

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o.2 – Appendix D of this section is non-mandatory and is not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations.					